

54. An athermal optical fiber grating device comprising:
a negative expansion substrate having an upper surface and first and second ends;
an optical fiber affixed to the substrate upper surface at at least two spaced apart locations; and
a grating defined in the optical fiber between and at a distance from each substrate end;
wherein the substrate provides thermal compensation to the grating.

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a negative expansion substrate having an upper surface and first and second ends;
an optical fiber affixed to the substrate upper surface at at least two spaced apart locations; and
a grating defined in the optical fiber between and at a distance from each substrate end;
wherein the at least two spaced apart locations comprise first and second spaced apart locations, the first location being between the grating and the first substrate end and the second location being between the grating and the second substrate end.

59. An athermal optical fiber grating device comprising:
a negative expansion substrate having an upper surface and first and second ends;
an optical fiber affixed to the substrate upper surface at at least two spaced apart locations; and
a grating defined in the optical fiber between and at a distance from each substrate end;
wherein: